

B-3 STORMDRAIN INLET PROTECTION**PURPOSE & APPLICATIONS**

A storm drain inlet protection is a sediment filter installed around a storm drain drop inlet or curb inlet to reduce sediment discharge. The purpose of storm drain inlet protection is to prevent sediment from entering a storm drainage system prior to permanent stabilization of the disturbed area. Stormdrains made operational before their drainage area is stabilized can convey large amounts of sediment to storm sewer systems or natural drainage ways and in extreme cases, the storm sewer itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

CONSIDERATIONS

- This practice applies mainly to enclosed drainage systems.
- If these systems outlet to a stream, water quality must be protected.
- This practice contains several types of inlet filters and traps which have different applications dependent upon site conditions and the type of inlet. Other innovative techniques for accomplishing the same purpose are encouraged, but they should be installed only after careful study of their effectiveness.
- Note that these various inlet protection devices are for drainage areas of **less than one acre**. Runoff from large disturbed areas should be routed through a sediment trap or sediment basin.
- The best way to prevent sediment from entering the storm sewer system is to stabilize the site as quickly as possible, preventing erosion and stopping sediment at its source.

SPECIFICATIONS**Design Criteria**

- The drainage area shall be no greater than 1 acre.
- The inlet protection device shall be constructed in a manner that will facilitate clean-out and disposal of trapped sediments and minimize interference with construction activities.
- Any resultant ponding of stormwater must not cause excessive inconvenience or damage to adjacent areas or structures.

Hay Bale Drop Inlet Structure

See the detail drawing located at the back of this section for the proper installation of hay bale sediment barrier.

- Hay Bales shall be as specified in the SEDIMENT BARRIER BMP
- Bales shall be string-tied with the bindings oriented around the sides rather than over and under the bales.
- Bales shall be placed lengthwise in a single row surrounding the inlet, with the ends of adjacent bales pressed together.
- The filter barrier shall be entrenched and backfilled. A trench shall be excavated around the inlet the width of a bale to a minimum depth of 4 inches. After the bales are staked, the excavated soil shall be backfilled and compacted against the filter barrier.
- Each bale shall be securely anchored and held in place by at least two stakes or rebars driven through the bale.
- Loose straw shall be wedged between bales to prevent water from entering between bales.

Silt Fence Drop Inlet Sediment Filter

See the detail drawing located at the back of this section for the proper installation of silt fence sediment barrier.

- Silt fence shall be as specified in the SEDIMENT BARRIER BMP and shall be cut from a continuous roll to avoid joints.
- Stakes shall be spaced around the perimeter of the inlet a maximum of 3 feet apart and securely driven into the ground (minimum of 8 inches).
- A trench shall be excavated approximately 4 inches wide and 4 inches deep around the outside perimeter of the stakes and 8 inches of the fabric shall be extended into the trench.
- The height of the filter barrier shall be a minimum of 15 inches and shall not exceed 18 inches.
- The trench shall be backfilled and the soil compacted over the fabric.

Gravel and Wire Mesh Drop Inlet Sediment Filter

This filtering device has no overflow mechanism; therefore, ponding is likely especially if sediment is not removed regularly. This type of device must never be used where overflow may endanger an exposed fill slope. Consideration should also be given to the possible effects of ponding on traffic movement, nearby structures, working areas, adjacent property, etc. See the detail drawing located at the back of this section for the proper installation of block and gravel sediment barrier.

With Gravel

- Wire mesh shall be laid over the drop inlet so that the wire extends a minimum of 1 foot beyond each side of the inlet structure. Hardware cloth or comparable wire mesh with 1/2-inch openings shall be used. If more than one strip of mesh is necessary, the strips shall be overlapped.
- Stone for French drains shall be placed over the wire mesh as indicated on Figure 16.3. The depth of stone shall be at least 12 inches over the entire inlet opening. The stone shall extend beyond the inlet opening at least 18 inches on all sides. Stone gradation shall be well graded with the maximum stone size of 6 inches and a minimum stone size of 1 inch.
- If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stones must be pulled away from the inlet, cleaned and replaced.

With Concrete Blocks and Gravel

- Place concrete blocks lengthwise on their side in a single row around the perimeter of the inlet, with the ends of adjacent blocks abutting. The height of the barrier can be varied, depending on design needs, by stacking combinations of 4-inch, 8-inch and 12-inch wide blocks. The barrier of blocks shall be at least 12 inches high and no greater than 24 inches high.
- Wire mesh shall be placed over the outside vertical face (webbing) of the concrete blocks to prevent stone from being washed through the holes in the blocks. Hardware cloth or comparable wire mesh with 1/2-inch openings shall be used.
- Stone shall be piled against the wire to the top of the block barrier. Stone gradation shall be well graded with the maximum stone size of 6 inches and minimum stone size of 1 inch.
- If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the blocks, cleaned and replaced.

Curb Inlet Sediment Filter

With Gravel

- Hardware cloth or comparable wire mesh with 1/2-inch openings shall be placed over the curb inlet opening so that at least 12 inches of wire extends across the inlet cover and at least 12 inches of wire extends across the concrete gutter from the inlet opening.
- Stone shall be piled against the wire so as to anchor it against the gutter and inlet cover and to cover the inlet opening completely. Maine Department of Transportation stone for French drains shall be used.
- If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the block, cleaned and replaced.

With Concrete Blocks and Gravel

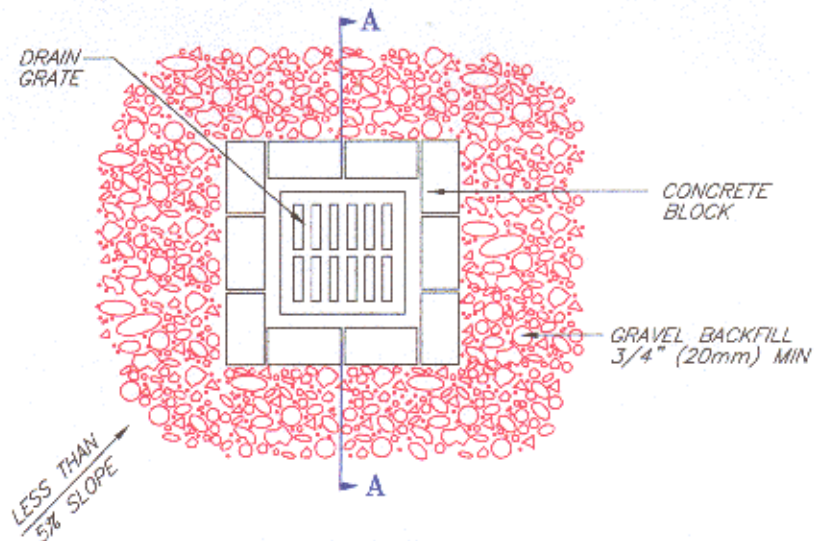
- Two concrete blocks shall be placed on their sides abutting the curb at either side of the inlet opening.
- A 2-inch by 4-inch stud shall be cut and placed through the outer holes of each spacer block to help keep the front blocks in place.
- Concrete blocks shall be placed on their sides across the front of the inlet and abutting the spacer blocks.
- Wire mesh shall be placed over the outside vertical face (webbing) of the concrete blocks to prevent stone from being washed through the holes in the blocks. Chicken wire or hardware cloth with 1/2-inch openings shall be used.
- Maine Department of Transportation stone for French drains shall be piled against the wire to the top of the barrier.
- If the stone filter becomes clogged with sediment so that it no longer adequately performs its function, the stone must be pulled away from the blocks, cleaned and replaced.

Manufactured Sediment barriers and filters

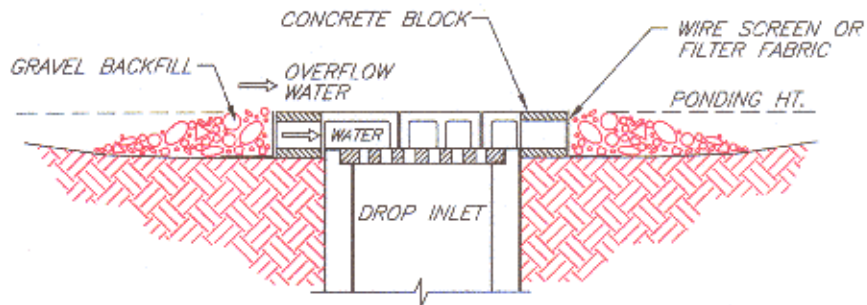
There are now various types of off-the-shelf systems with the function to detain stormwater and collect sediments such as the silt sock or other manufactured materials. These measures are acceptable as long as they are installed, used and maintained as specified by the vendor or manufacturer.

MAINTENANCE

- The structure shall be inspected before and after each rain event and repaired as needed.
- Sediment shall be removed and the stormdrain sediment barrier restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
- Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.
- All catchbasins and stormdrain inlet must be cleaned at the end of construction and after the site has been fully stabilized.



PLAN VIEW



SECTION A - A

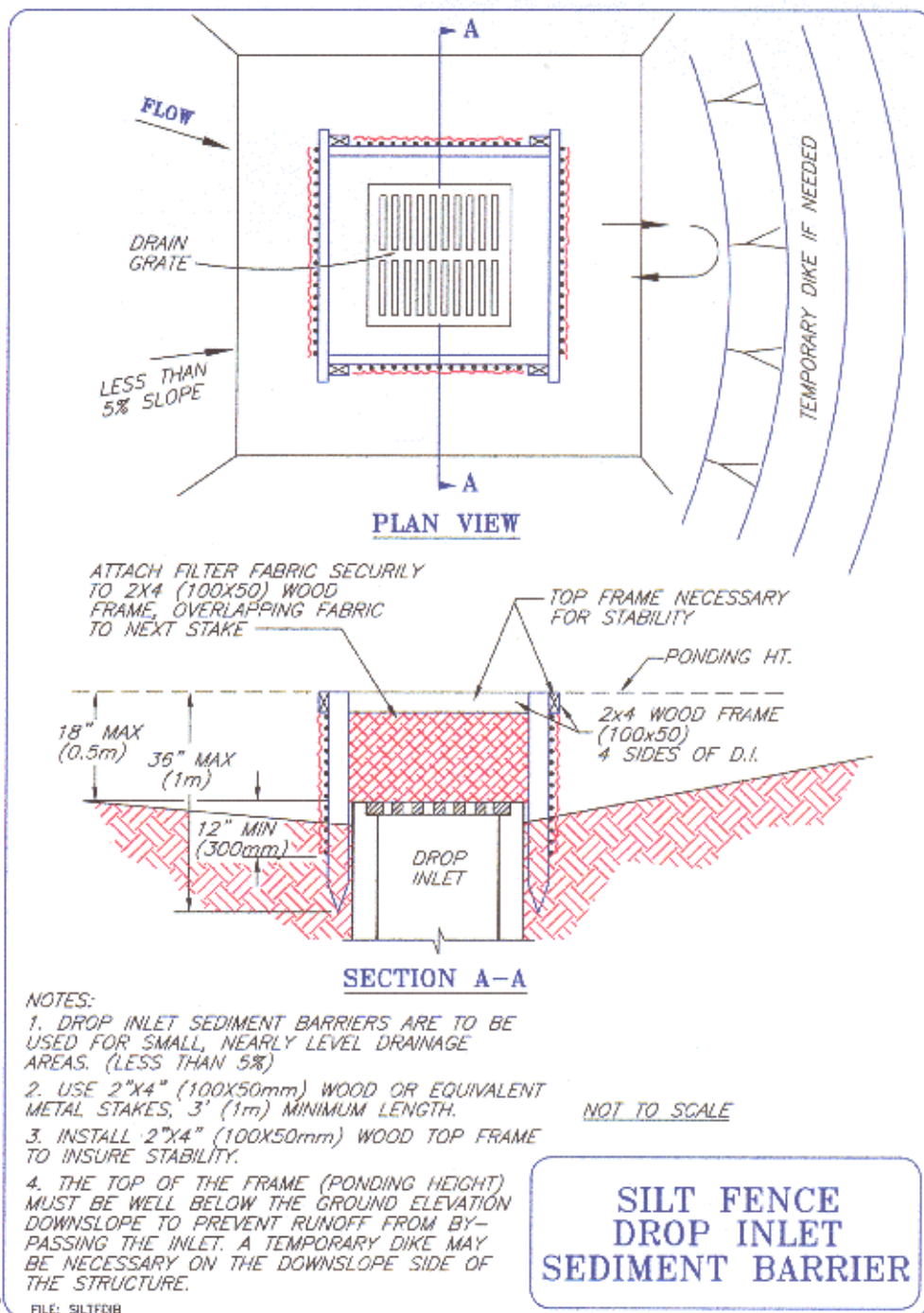
NOTES:

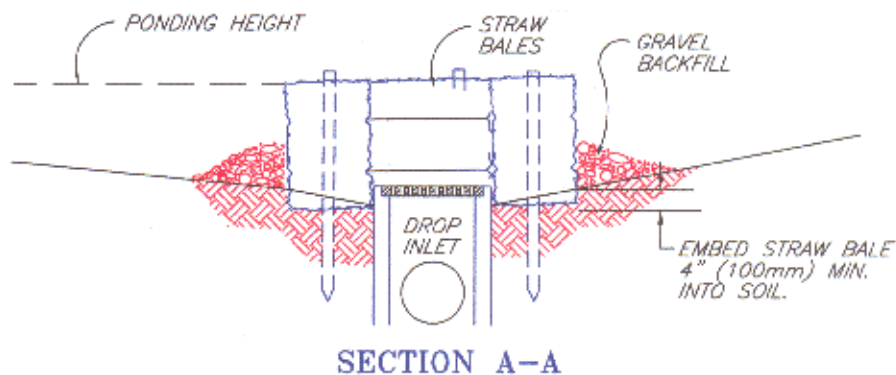
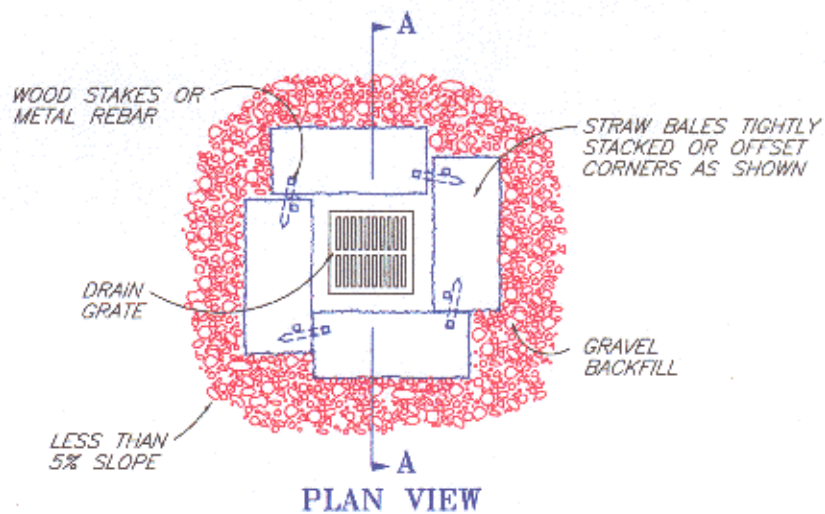
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EXCAVATE A BASIN OF SUFFICIENT SIZE ADJACENT TO THE DROP INLET.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.

**BLOCK AND GRAVEL
DROP INLET
SEDIMENT BARRIER**

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HATTINGHAM

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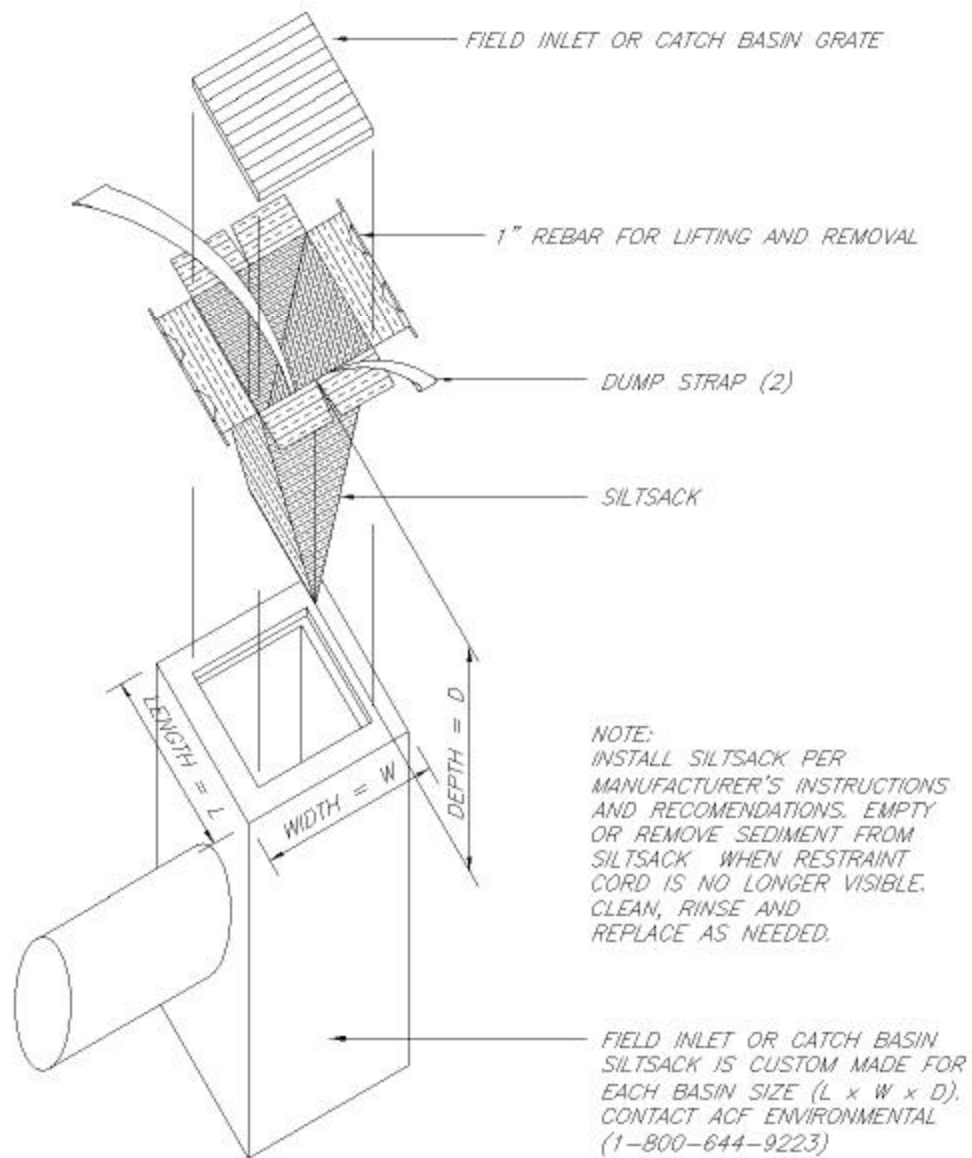
NOTES:

1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
2. EMBED THE BALES 4" (100mm) INTO THE SOIL AND OFFSET CORNERS OR PLACE BALES WITH ENDS TIGHTLY ABUTTING. GRAVEL BACKFILL WILL PREVENT EROSION OR FLOW AROUND THE BALES.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

**STRAW BALE/GRAVEL
DROP INLET
SEDIMENT BARRIER**

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SILTSACK INLET SEDIMENT CONTROL DEVISE

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